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## PATENT COOPERATION TREATY

PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 14 NOV 2005



PCT/KR2004/002418

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Applicant's or agent's file reference OPP041564KR	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. <b>PCT/KR2004/002418</b>	International filing date(day/month/year) <b>21 SEPTEMBER 2004 (21.09.2004)</b>	Priority date (day/month/year) 17 OCTOBER 2003 (17.10.2003)	
International Patent Classification (IPC) or national classification and IPC  <b>IPC7 A61K 31/352, A61K 7/00, A61P 17/02</b>			
Applicant  <b>LG HOUSEHOLD &amp; HEALTH CARE LTD. et al</b>			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:           <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> </li> <li>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ul>
4. This report contains indications relating to the following items: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the report</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>

Date of submission of the demand  <b>15 APRIL 2005 (15.04.2005)</b>	Date of completion of this report  01 NOVEMBER 2005 (01.11.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer  LEE, Mi Jeong  Telephone No. 82-42-481-5601 

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## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☒ This report is based on translations from the original language into the following language English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☒ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
- ☐ the description:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:  
pages \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1, 6, 7	YES
	Claims	2 - 5	NO
Inventive step (IS)	Claims	1, 6	YES
	Claims	2 - 5, 7	NO
Industrial applicability (IA)	Claims	1 - 7	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

The following documents are referred to in this report:

D1: JP 2001-131050 A (15 May 2001)  
D2: WO 2003/072120 A1 (04 Sep. 2003)  
D3: Life Sciences, Vol.66(8), pp.709-723 (2000)  
D4: Pharmazie, Vol.48, pp.144-145 (1993)  
D5: US 5360816 A (01 Nov. 1994)

## 1. Novelty

Claim 1 of the present invention relates to a stimulator of collagen synthesis comprising the compound of formula 1 such as xanthotoxol(=8-hydroxypsoralen), 8-hydroxybergapten, and prangenidin.

Claims 2-5 of the present invention relate to a composition for external use comprising the compound of formula 1. The compound of formula 1 is described to have anti-wrinkle, wound-healing, anti-inflammatory, and anti-oxidative activity. The composition can be formulated as a cosmetics such as skin lotions, emulsions, and creams.

Claim 6 of the present invention relates to a cosmetic composition for anti-wrinkle comprising the compound of formula 1.

Claim 7 of the present invention relates to an external composition for wound-healing comprising the compound of formula 1.

D1 discloses a cosmetic composition comprising xanthotoxol with anti-inflammatory and whitening activity. The cosmetic composition can be formulated as skin lotions, emulsions, and creams.

D2 discloses that coumarin compounds including xanthotoxol are capable of increasing evidently the numbers of flakes formed by tunicae granulosa in the skin flakes in a rat.

D3 discloses that xanthotoxol exhibits potent anti-oxidative activity in both lipid peroxidation and hemolysis assays.

D4 discloses that xanthotoxol and bergaptol can be used in the photochemotherapy of a number of skin diseases such as psoriasis and vitiligo.

D5 discloses that a pharmaceutical composition comprising 5-methoxypsoralen is useful in treatment of psoriasis and other skin disorders. (Continued on Supplemental Sheet.)

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

Box V.

None of D1-D5 discloses that the said compound of formula 1 has the activities of stimulating collagen synthesis, improving skin wrinkles, and wound-healing. However, D1 discloses a cosmetic composition comprising xanthotoxol which belongs to the compound of formula 1.

Thus, the novelty of claims 2-5 in the present invention is negated by D1 [Article 33(2) PCT].

**2. Inventive Step**

Since the novelty of claims 2-5 cannot be acknowledged over D1 as mentioned before, the inventive step of claims 2-5 cannot be acknowledged, either.

There is no implication or suggestion to lead those who skilled in the art to expect that the compound of formula 1 has the activities of stimulating collagen synthesis and improving skin wrinkles in D1-D5.

Thus, the inventive step of claims 1, 6 can be acknowledged over D1-D5.

Since D2 discloses that xanthotoxol is capable of increasing evidently the numbers of flakes formed by tunicae granulosa in the skin flakes, those who skilled in the art would be able to expect that the said compound can be used for wound-healing from D2.

Therefore, the inventive step of claim 7 cannot be acknowledged over D2 [Article 33(3) PCT].

**3. Industrial Applicability**

The subject-matter of claims 1-7 appears to be industrially applicable [Article 33(4) PCT].